

REMARKS

Reconsideration of this patent application is respectfully requested in view of the following remarks. The Applicants wish to thank Patent Examiner Robert Kunemund for the many courtesies extended to the undersigned attorney during the Personal Interview on MAY 19, 2003. The substance of the Interview is set forth in the Examiner Interview Summary and in this Response.

The Patent Examiner has rejected claims 6, 7, and 9-20 under 35 U.S.C. 103(a) as being unpatentable over *Fabry et al* in view of *Hayashida et al* and *Lampert et al*.

The present invention is directed to a process for treating a semiconductor wafer, comprising polishing the semiconductor wafer; immediately after polishing the semiconductor wafer removing the semiconductor wafer from the polishing plate; immediately after removing the semiconductor wafer from the polishing plate, bringing the semiconductor wafer into contact with an aqueous treatment agent solution for oxidizing a polished surface of the semiconductor wafer by action of the aqueous treatment agent solution, the wafer being brought into contact with the aqueous treatment agent solution in a manner which is selected from the group consisting of (a) spraying the semiconductor wafer with the aqueous treatment agent solution,

(b) dipping the semiconductor wafer into the aqueous treatment agent solution and (c) applying the aqueous treatment agent solution to the polished surface of the semiconductor wafer by means of a cloth which has been moistened with the aqueous treatment agent solution; and cleaning the semiconductor wafer.

The Patent Examiner acknowledges on Page 2 of the Office Action that a difference between *Fabry et al.* and the claimed invention concerns the timing of the process steps. (Please see Final Office Action dated December 4, 2002.)

The *Fabry U.S. Patent* in column 5 in Example 1 in lines 59 to 63 discloses that subsequent to the polishing step, the wafers were first freed of polishing residues, and then subjected to an oxidative cleaning. Thus, there is an additional step of freeing from polishing residues in *Fabry*, and not the claimed step of immediately oxidizing after removing the wafers from the polishing plate.

The *Hayashida U.S. Patent* has no teaching and no disclosure of when wafer oxidizing occurs relative to wafer polishing.

As has been previously stated, there is a very important difference over the prior art references, namely the beginning of

the oxidizing treatment which is the crucial difference between the claimed invention and the cited prior art.

According to the Patent Examiner, *Lampert et al* already teach that the steps of the process are to be done as soon as possible (Please see page 3, first sentence of the Final Office Action). It is respectfully submitted that this interpretation of the *Lampert* document is not supported by the actual disclosure of *Lampert*. The Patent Examiner also failed to indicate where such a teaching can be found in the *Lampert* patent.

If the *Lampert* reference is systematically read in order to discover this teaching relating to the starting time for the oxidizing treatment, several text passages will be found:

"The process can be achieved in a particularly simple manner generally by adding an oxidizing agent or oxidizing agent mixture, at the end of the polishing step, to the alkaline polishing agent flowing onto the workpiece surface." (Please see column 1, lines 60 - 65 of *Lampert*).

This is a clear statement in *Lampert* which does not leave any room for an interpretation of the above-mentioned kind. This statement sets the starting time for the oxidizing treatment at a

moment when the wafers are still lying on the polishing plate. Hence, the starting time which is taught by *Lampert et al.* is earlier than the time claimed by the present invention. The inventor, Mr. Hennhöfer also showed in the filed Declaration Under Rule 132 the significant disadvantages which are inherent in the *Lampert et al.* process.

"In the process according to the present invention, the high quality of the polished surface, achieved in the course of the polishing step may by means of the coating applied directly on completion of the polishing step, be preserved in both one-side and two-side polishing of the silicon wafers." (Please see column 3, lines 27 - 32 of *Lampert*).

A proper interpretation of the meaning of "directly on completion" cannot be made without considering the rest of the *Lampert* disclosure, especially the passage in column 1 lines 60 - 65, noted above and further in Example 2 and in claim 1:

"Without interrupting the polishing operation, polishing was continued for another minute with continued feed of the now-peroxide-containing polishing agent under otherwise unchanged conditions.." (Please see Example 2, column 4, lines 39-42 of *Lampert*).

"...without interruption of the polishing, continuing and completing the polishing operation under oxidizing conditions..." (Please see column 5, lines 4 to 7 of claim 1 of *Lampert*).

After considering all of these quotations, it must be concluded that the whole document provides no proper basis for the Patent Examiner's assertion that *Lampert et al* already teach that the steps of the process are to be done as soon as possible. In fact, it is evident that *Lampert et al* teach the oxidizing of the wafers at a time when the wafers are still lying on the polishing plate.

However, based upon this teaching in *Lampert*, then it would be impossible to combine *Fabry et al.* with *Lampert et al.* so that the claimed invention would have resulted. This is because *Fabry* teaches as a precise starting time for oxidation, a time which is set after the polishing wafers have been freed from polishing residues. Please see column 5 lines 59 to 67 in Example 1 of *Fabry*).


Thus there exists, this substantial inconsistency in the teachings of these prior art references. This situation is as follows: *Fabry et al.* teach a starting time which is later than the time specified in the claimed invention, while *Lampert et al.*

teach a time which is earlier than the time claimed in the present invention. Accordingly, one who is skilled in the art would have to choose between the teaching of either *Fabry et al.* or *Lampert et al.* However, one skilled in the art could not choose both teachings which are mutually exclusive and exclude each other and which are entirely different from the presently claimed invention.

In summary, claims 6, 7, and 9 to 20 are pending. In view of the above arguments, it is firmly believed that the present invention, and all the claims, are patentable over all the prior art applied by the Patent Examiner under 35 U.S.C. 103. Withdrawal of this ground of rejection is respectfully requested. A prompt notification of allowability is respectfully requested.

Respectfully submitted,
HEINRICH HENNHÖFER ET AL.

By:

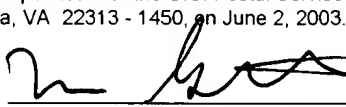

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Encl.: 1) Notice of Appeal and a copy of Notice of Appeal

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